BC Lands

Ministry of Forests and Lands

Surveyor General Branch

information paper

LEGISLATIVE LIBRARY
VICTORIA, B.C.

BC
S86
D:C76
1987
c.3
87-05621/

CROWN LAND REGISTRY

- an information paper

June 1987

Surveyor General Branch
Ministry of Forests and Lands

Table of Contents

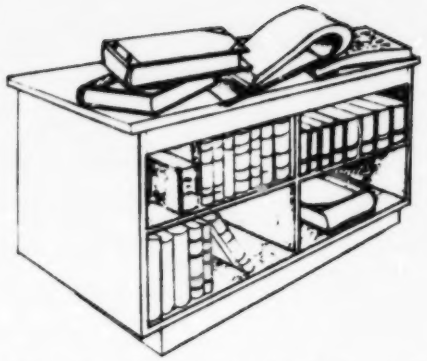
	Page
INTRODUCTION	1
TEXTUAL PORTION OF CROWN LAND REGISTRY	2
HISTORY	2
THE CROWN LAND REGISTRY INFORMATION SYSTEM	4
Crown Land Registry	5
Tenure Administration System	5
Survey Plan Index	6
Land Inventory System	7
Other Systems	8
FUTURE	9
GRAPHIC PORTION OF CROWN LAND REGISTRY	11
HISTORY	11
GRAPHIC SYSTEM DATABASE	12
FUTURE	15
SUMMARY	17

INTRODUCTION

Pursuant to the Land Act , the Ministry of Forests and Lands is responsible for administering the Crown land base of British Columbia, an area covering approximately two million hectares. A key component of this mandate is maintenance of the Crown Land Registry, which is a record of all Land Act encumbrances and administrative activities on provincial Crown land. This public record of surface encumbrances is composed of two distinct parts: the Crown Land Registers, which are textual and the Official Plans, which are graphic. Although the textual and graphic portions of the registry are complementary sources of information for Crown land, for reasons of clarity, it is advantageous to discuss each component separately. Each section will be approached by initially providing an historical background, then describing the textual and graphic portions as they are today and finally taking a look at some proposed enhancements for future development.

TEXTUAL PORTION OF CROWN LAND REGISTRY

HISTORY



Crown land records in British Columbia have been maintained since the 1850's. The Crown Land Registers catalogued each Crown land parcel by legal description and listed appropriate encumbrance information, such as the tenure type and name of the tenure holder. For over a century, all Crown land information was maintained manually in registry books. As settlement intensified, so did the potential for boundary disputes and other conflicts, which resulted in a greater demand for accurate land records. As the number of parcels, plans and tenures increased throughout the province, the central Crown Land Registry grew to be cumbersome and increasingly difficult to update.

In 1978, the former Ministry of Lands, Parks and Housing decentralized, which culminated in the establishment of eight regional offices throughout the province for the delivery of Lands services. Each region became responsible for administration of the Crown land within its boundaries, including the recording of Crown tenures. There was also an increased demand for fast, accurate land information. Ministry information requirements, deterioration of manual registers and decentralization made the acquisition of a computerized information system a logical solution for recording and maintaining

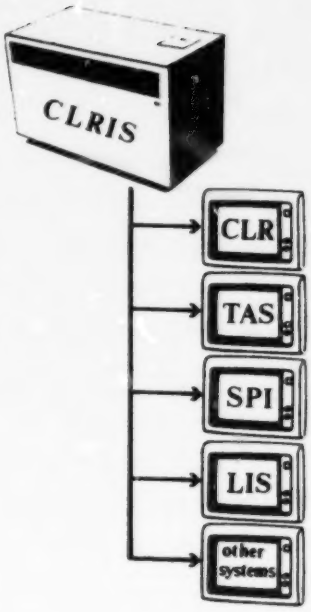
the Crown Land Registry. The use of a computer system would allow users throughout the province to instantly access all Crown land records.

In 1977, Crown land tenure information (executed leases, licences and reservations) had been entered on a Datapoint Computer System. With decentralization a year later, this single system became eight independent regional information systems which could not communicate with each other or with headquarters. This multiplicity of separate systems led inevitably to irregularities and non-conformity among the databases.

After an intensive two-year program of coding manual records, an automated system was implemented in 1981 under the name Crown Land Information System, or C.L.I.S. With the use of an Intergraph PDP 11/70, C.L.I.S. enabled the regional offices to gain access to most information in the Crown Land Registers. However, the system had some limitations in that it could perform only a limited number of pre-designed searches, the output on the terminal could only be viewed as printed information, the only key for access was the legal description and the system was slow.

The acquisition of an IBM 4300 computer in 1984 permitted the Ministry to process a large volume of data and support a large group of users. Implemented and developed at this time, was a new system of the Crown Land Registry, known as the Crown Land Registry Information System, or C.L.R.I.S.

CROWN LAND REGISTRY INFORMATION SYSTEM



The Crown Land Registry Information System evolved incrementally using various types of computers and programs. The software continues to be developed by Information Systems' experts in conjunction with management and users from both the regions and headquarters. The C.L.R.I.S. has now become the parent system for the large pool of information generated by the administration of Crown land. Within C.L.R.I.S., there are a number of sub-systems which are designed to provide particular categories of data. The information database within C.L.R.I.S. can be accessed in different ways by using any of the various sub-systems, depending on the users' information requirements. Since the database is relational and the sub-systems are integrated, Crown land information is entered only once but can be accessed in a variety of formats for different needs.

The four principle sub-systems within the Crown Land Registry Information System are: C.L.R, the Crown Land Registry; T.A.S., the Tenure Administration System; S.P.I., the Survey Plan Index System; and L.I.S., the Land Inventory System.

Crown Land Registry

The Crown Land Registry sub-system is used to determine the status of Crown land in response to disposition applications or reserve proposals for surveyed and unsurveyed land. As such, it is the cornerstone system within the C.L.R.I.S. It provides views of information on parcels of land including administrative information, such as regional and electoral districts, and status information. Information in the C.L.R. can be accessed through the entry of either the parcel identification number (PIN) or the legal description. PIN's are assigned to each parcel (primary and subdivision) in the system by the computer for ease of access to a parcel. The functions within the C.L.R. allow for parcel inquiry, parcel update and file information maintenance. Other agencies, such as the Timber Harvesting Branch and the Government Agents Branch, as a pilot project also have access to the Crown Land Registry sub-system.

Tenure Administration System

The Tenure Administration System (T.A.S.) is a network of data designed to supply the Ministry with a record of Crown land dispositions and associated financial record keeping data. In other words, T.A.S. provides detailed information on all leases, licences, rights-of-way and reserves administered by the Lands Division, including information about clients, billings, payments and rental records. The Tenure Administration System consists of four components, which are designed to meet the processing needs of the three functional areas in each land district office, together with the overall needs of

headquarters users. The Field Services Component enables the entry and processing of programmed and non-programmed field office work. The Examiners Component allows for the adjudication and confirmation processes involved in conveying dispositions of Crown land. The Accounts Receivable Component allows the entry and processing of revenue received in the district offices as payments on account. The Headquarters Component supports a number of headquarters requirements that currently include initiation of month end controls, control of interest rates and maintenance of revenue codes and rent codes. Information from an application for land is entered as soon as it is received, each stage in the application process is recorded and associated work ledgers are maintained on the T.A.S. Accounts Receivable records. T.A.S. is also the maintenance system for all current tenures (e.g. leases, licences, rights-of-way). It displays review dates, expiry dates, current rents and annual rent increases and also provides data on parcels requiring a review or lease renewal. For financial purposes, the Tenure Administration System is an accounts receivable and billing system and provides appropriate financial management and control over revenues and the accounts receivable transactions.

Survey Plan Index

The Survey Plan Index is the third sub-system of C.L.R.I.S. and was introduced to replace 28 reference volumes containing the survey plan indices. The database in S.P.I. is the index to most of the 120,000 survey plans maintained in the Plans Vault and contains all the information about a plan, such as the surveyor, scale, file number, re-survey details, post

renewal data, Field Book number and year, wellsite name, mineral claim data and special timber licence number. S.P.I. provides for the entry and subsequent maintenance of information related to the above mentioned business areas. S.P.I. also provides the ability for users to cancel parcels. Through the Survey Plan Index System, users may place orders for copies of plans and field book notes.

Land Inventory System

Another sub-system of the Crown Land Registry Information System is the Land Inventory System. L.I.S. is an inventory catalogue system of Crown land offered for sale and lease, and provides for the entry and subsequent maintenance of information related to primary and subdivision parcels of Crown land that are now, or will be, marketable. Not only does L.I.S. maintain information on marketable land, such as price, location and legal description, it also tracks potentially marketable parcels, such as forfeitures, cancelled tenures and planning reserves. As all the sub-systems within C.L.R.I.S. are integrated, these potentially marketable parcels are entered automatically into the Land Inventory System from other administrative transactions, such as cancelling a lease in the Tenure Administration System. The parcels are then specially coded to denote the need for review before they are published in the Crown Land Marketing Catalogue, a listing of all Crown properties available for marketing which is produced semi-annually. Several Crown Corporations with interest in Crown land are accessed to the Land Inventory System, for purposes of both land inventory inquiry and database updating.

However, Crown corporation users may only enter parcels which are currently available for marketing.

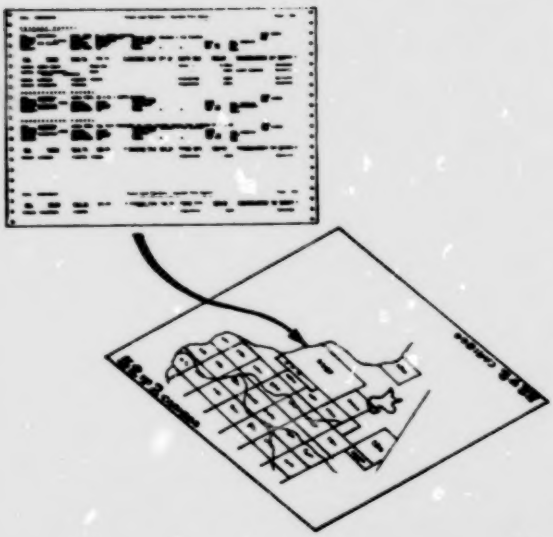
A recent enhancement to the C.L.R.I.S. was the introduction of software which replaced the manual transfer of parcel data between the T.A.S. and the L.I.S. with an automated link. This ensures that parcels for which a Land Act tenure has expired are placed in a holding inventory category prior to being actively marketed.

Other Systems

In addition to the four principle sub-systems within the Crown Land Registry Information System are three production control systems which are used to produce monthly, quarterly and annual production reports. The Management Information System (M.I.S.) produces statistics on the numbers and types of tenures processed by the district offices. This data is derived mainly from the Tenure Administration System. The Mapping Production Control (M.P.C.) maintains statistics on the numbers of digital maps produced and the Survey Production Control (P.C.S.) contains data on the files processed by the Surveyor General Branch and may also be used to track a file's progress within that Branch.

Two other systems of the C.L.R.I.S. include a Major Projects Bulletin, which provides the highlights of Lands projects in each district office and the File Search Program, which allows users to set their own search parameters on nearly any information in the system and receive an overnight printout. This program requires the user to have a good understanding of the database.

FUTURE



A number of initiatives have been identified which will enhance the current database of the textual portion of the Crown Land Registry Information System. A geographic location device is proposed which will locate prime parcels within the province through entry of prime parcel centroids into the system. Forest tenure information is also scheduled for entry into the Crown Land Registry Information System, which will enhance the usefulness of the system for forestry personnel. This forest tenure data will be accessible through either the Crown Land Registry or Tenure Administration System. Another initiative is the proposed incorporation of historical textual register data into the C.L.R.I.S. The Ministry of Forests and Lands already has access to the Registry of Companies' database and it is intended that, in the future, Ministry users of the Crown Land Registry Information System will be linked to databases of other land or resource agencies. Three database systems are presently being considered. These are the Computer Assisted Property Assessment System (B.C. Assessment Authority), the Automated Land Title Office System (Land Title Office) and the Land Tax Information System (Real Property Taxation). Two further ministries may be candidates for system access or database exchange, subject to automation of

records which are manually maintained at this time. These are the Ministry of Energy, Mines and Petroleum Resources for an inventory of mineral and petroleum title data and the Ministry of Environment and Parks for a database of Water Act rights and waste management information.

A major enhancement to the Crown Land Registry Information System is the automation of the Lands Division File Index. (Automated File Index System - A.F.I.S.). The preliminary objective is to provide an index to and description of all Lands Division zero files. The system will also provide the location and status (active, archived or microfilmed) for all files and tracking of file charge outs. Record management file retention and disposal schedules are also included. The system is in the design phase and is intended to be accessed by Lands headquarters and field personnel.

GRAPHIC PORTION OF CROWN LAND REGISTRY

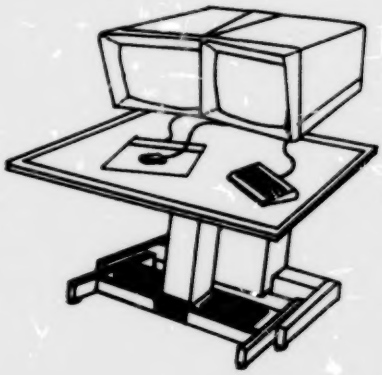
The graphic portion of the Ministry's Crown land records is composed of Crown land survey plans and the Official Ministry Reference Maps.

HISTORY

Mapping developed as a graphic form of recording the physical features of land and was refined over time to indicate the demarcation of land boundaries. The mathematical measurement of property boundaries, in conjunction with astronomical sightings, became known as surveying and has become very important with increased land settlement. Land surveying and consequential record keeping is designed to describe the location and spatial extent of a parcel of land, thus enabling a land owner to precisely demarcate the physical extent of land holdings as a registered title or leasehold interest.

At the time that British Columbia was initially settled during the 1980's, all land was held by the Crown and the Province assumed the responsibility for administering it. For over a century, Crown land survey data was recorded manually on a series of 729 Ministry reference maps. These maps were main-

tained and updated entirely by hand, including redrafting and replacement as required by physical wear.



In 1979, with the advancement of technology and the increased demand for use of Crown land, the Ministry decided to regionalize land administration and automate both theCrown land registers and the Ministry reference maps. In 1980, an Intergraph Design System was installed and the Ministry began entering the multi-scale map information from the original 729 reference maps into the computer. However, it was quickly apparent that simply digitizing, or tracing, the old maps would not produce a satisfactory result, as it perpetuated and exaggerated existing errors. Also, it was recognized that the system was capable of far more than draughting and with the proper use of source documents, could function as a graphics database. Consequently, the Ministry has now standardized mapping by using the British Columbia Geographic System of Mapping at the 1:20,000 scale, which provides greater precision and complies with the mapping systems of other resource agencies.

GRAPHIC SYSTEM DATABASE

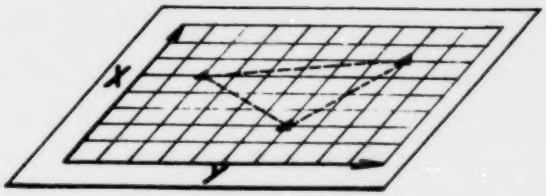
The Graphic System of the Crown Land Registry Information System provides the Ministry with an automated means of producing and storing reference maps and associated data. The

computer system used is the Intergraph Design System, which is composed of eight graphic work stations controlled by a VAX Central Processing Unit. The system also makes use of compatible graphic production software and a map plotter which translates numerical digital information into graphic printed form.

Crown land survey plans, in concert with topographic, tenure and administrative boundary information, are superimposed on base map data to produce the Official Ministry Reference Maps. The base map data is received in digitized form from the Ministry of Environment and Parks and in some cases, from the Forest Service or other agency. The topographic or planimetric base maps are of the standard 1:20,000 British Columbia geographic system format, each map sheet being bounded on the north and south by lines of latitude which are 6 minutes apart and on the east and west by lines of longitude 12 minutes apart. For easy indexing, these sheets are clearly defined within the National Topographic System and can be further subdivided for larger scale mapping.

The foundation of the graphic system is a design file, which provides the electronic means of establishing the relative position of mapping features. When an official reference map has been completed, the design file holds the combination of all active design levels for that map. Specific design files can be combined to produce maps for particular themes, such as forest tenures, mineral and petroleum tenures, reserves over Crown land, cadastral or planimetric information and administrative areas. The relative positions of cadastral or map features are accommodated by defining all positions in terms

of a plane coordinate, or an "x,y" grid system. The map features are positioned in relation to geodetic survey control points, which can be expressed in terms of plane coordinates.



Two or three control points per source document are sufficient to determine the orientation of the plan coordinate grid in relation to the map.

The graphic system serves as an index to information about unsurveyed Crown land and illustrates the basic survey structure of British Columbia. Digitized reference maps show the location and extent of existing surveyed lands, which enables the management of new surveys, re-definition and sub-division of old surveyed parcels and some cataloguing of survey field books and plans. One of the most important features of the graphic system is the ability to instantly update the automated format for cadastral reference maps to reflect the most current information. Another important facet of the system is the provision of a secure and durable format for storing map information.

The graphic system does not contain encumbrance information for private land. This information is contained in the Land Title System of the Ministry of Attorney General under authority of the Land Title Act.

FUTURE

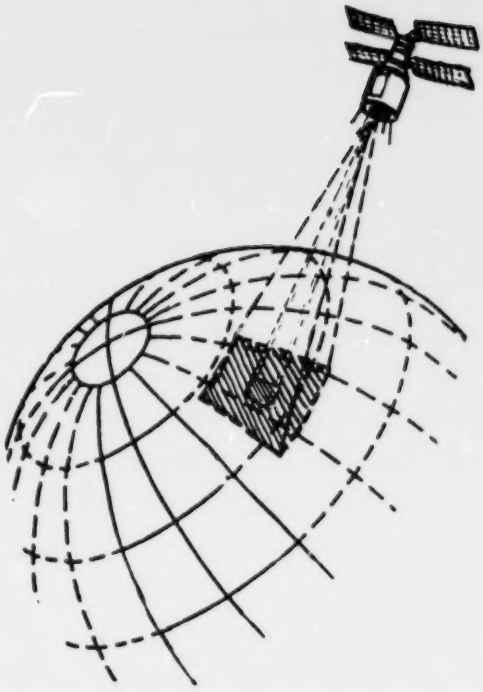
Several enhancements are planned for the graphic portion of the Crown Land Registry Information System in order to provide better service to system users and to better support the cadastral survey structure of the province.

The primary enhancement is to georeference the graphic system, which will give the system a capability to link the textual and graphic C.L.R.I.S. databases. Development of this capability will be conducted as a pilot project through implementing enhanced map construction standards, as well as bringing the existing inventory of reference maps up to georeferenced standards.

Future development of the graphic system includes remote access by Ministry field offices so that field staff can have instant access to current graphic information. Prior to remote access being made available, a sufficient number of maps will have to be digitized to provide a reasonably complete coverage of digital information to all field offices. The objective is to complete 3750 reference maps which will cover 95% of those areas in British Columbia experiencing Crown land activity pursuant to the Land Act.

Based on availability, the Ministry will attempt to integrate the C.L.R. graphics system with the graphic databases of municipalities and other agencies in order to improve the reference map database for congested areas. Another proposed enhancement to the C.L.R.I.S. graphics database will be the automation of Official Plan information, as part of the

verification process. This will enable the Official Plan data to be used directly as a component of the automated reference map construction process.



The Ministry of Forests and Lands will initiate research on the use of the Global Positioning System of surveying for application in cadastral land surveys and mapping control. Global positioning will allow users to compute survey data at the site and reference maps may be produced with the same degree of accuracy as the official plans, thereby displaying the true geographic position of all cadastral parcels.

SUMMARY

The Ministry of Forests and Lands has the legislative responsibility through the Land Act to administer the Crown land base of the province. This administrative responsibility has translated into an operational mandate for the Surveyor General Branch for the maintenance of the Crown Land Registry. The C.L.R. is the official government record of Land Act surface encumbrance information for Crown land in British Columbia. Within the last ten years, the means for maintaining the Crown Land Registry has evolved from a manual record of physical registers, plans and maps to an automated system known as the Crown Land Registry Information System. The graphic portion of the Crown Land Registry Information System contains the graphic representations of various categories of surface rights over Crown land and the textual part of the C.L.R.I.S. is comprised of the C.L.R., an inventory of all Crown parcels; the T.A.S., a database containing all Land Act tenures; the S.P.I., the automated index to survey plans; and the L.I.S., an inventory of Crown parcels available for marketing.

Technological development has enabled the Surveyor General Branch to provide an automated, accurate and versatile land information system which operates in a decentralized administrative environment. Future development of a variety of enhancements to the Crown Land Registry Information System will provide improved service to system users and increase support to the cadastral survey structure of the province. Georeferencing based on the 1:20,000 scale digital resource map series will permit an automated linkage between the Ministry's graphic and textual systems and will enable interactive update by remote users.